

# **2007 Annual Reports and Summary for the South Bay Wastewater Reclamation Plant & Ocean Outfall**



NPDES No. CA 0109045  
Order No. 2006-067  
&  
Order No. 2000-203





THE CITY OF SAN DIEGO  
MAYOR JERRY SANDERS

June 30, 2008

Mr. John Robertus, Executive Officer  
California Regional Water Quality Control Board  
9174 Sky Park Court, Suite 100  
San Diego, CA 92123

Attn: POTW Compliance Unit

Dear Mr. Robertus:

Enclosed are the 2007, Annual Reports and Summary, South Bay Water Reclamation Plant and Ocean Outfall as specified in discharge Order No. 2006-067, NPDES Permit No. CA0109045.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

ALAN C. LANGWORTHY  
Deputy Director  
Environmental Monitoring & Technical Services Division

SWM

cc: EPA Region 9  
San Diego County Department of Environmental Health  
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File



City of San Diego  
Metropolitan Wastewater Department  
Environmental Monitoring & Technical Services Division

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**South Bay Wastewater Reclamation Plant and Ocean Outfall Annual  
Monitoring Report  
2007**

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City of San Diego  
Metropolitan Wastewater Department

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I. Introduction

- A. Executive Summary:
- B. Explanatory Notes:
- C. Overview of the Metropolitan Wastewater (Metro) System
- D. Overview of SBWRP
- E. Discussion of Compliance Record
- F. Plant Facility Operation Report
- G. Correlation of Results to Plant Conditions

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## I. Introduction

### A. Executive Summary:

#### Purpose:

This report meets the annual reporting requirements of Monitoring and Reporting Program (MRP) Order No. R-2006-067 (NPDES Permit No. CA0109045), as well as the requirements of Order No. 2000-203 relating to the production and purveyance of recycled water at the South Bay Water Reclamation Plant (SBWRP). It also serves as a historical record and reference of operational and compliance metrics of value to the public, policy makers, and technical users.

#### Background:

The South Bay Water Reclamation Plant (SBWRP) is located at the intersection of Dairy Mart and Monument Roads in the Tijuana River Valley. The plant relieves the South Metro Sewer Interceptor System and provides local wastewater treatment services and reclaimed water to the South Bay. The plant opened in May 2002 and has a wastewater treatment capacity of 15 million gallons a day. The plant shares the South Bay Ocean Outfall (SBOO) with the International Wastewater Treatment Plant operated by the U.S. Section of the International Boundary and Water Commission (IBWC).

During 2007, the plant received and treated 3.153 billion gallons of wastewater, reclaiming 76% or 2.389 billion gallons. Fifty-seven percent of the reclaimed water was beneficially reused by the Otay Water District, the International Treatment Plant, or used for in-plant processes. During the warmer periods, virtually 100% of the reclaimed water was reused.

<b>Key metrics for 2007</b>	<b>Daily Average Flow (mgd)</b>	<b>Total Annual Flow (million gallons)</b>
Influent to plant (Raw Wastewater Treated)	8.66	3,153
Effluent to Ocean Outfall	4.03	1,467
Reclaimed Water Produced	6.53	2,389
Beneficial Reuse (recycled water distributed)	3.72	1,362
Sludge and returns to South Metro Interceptor (SMI)	1.45	529
Plant Use of Reclaimed Water	0.72	261

For a detailed discussion of the plant and treatment process see sections D., Plant Facility Operation Report, and Chapter III. Plant Operations Summary.

#### Major changes:

- **Beneficial Reuse** of Reclaimed Water increased significantly.
- **Flows increased** significantly for most of the wastewater streams, both influent and effluents, with the notable exception of discharge to the ocean.
- **Reduced discharge to the ocean**, particularly as a percent of influent.

## Compliance:

### Effluent to Ocean Outfall (NPDES) Discharge:

We believe that the discharge to the ocean from SBWRP was within discharge limits. However, as a consequence of maximizing the production and distribution of Reclaimed Water, the discharge to the SB outfall decreased considerably. At many times essentially no flow was discharged to the outfall. Between June and November 2007, the samples taken for monitoring were frequently impacted by the extremely low flow/no flow conditions. We believe that the configuration of the shared outfall structure allows International Wastewater Treatment Plant (IWTP) primary effluent to backup into the intake for our SBWRP effluent sampler. This was confirmed by SB Engineering based on the hydraulic profile of the SB outfall line and the diversion box where the SB outfall and IWTP effluent flows mix. The higher values of the monitored constituents (e.g. BOD, TSS, TDS, etc.) are more characteristic of the primary effluent and the data makes it appear to be exceedances of the discharge limits. See section E. Discussion of Compliance Record, for details. We are continuing to develop a solution for the situation.

### Recycled Water:

There were 16 exceedances of limits in 2007 for recycled water, for exceeding limits on total coliforms or missing sampling. The problem in reducing total coliforms was traced to algae growth on the walls of the UV disinfection cells which reduced the effectiveness of disinfection. A number of solutions were considered and dosing of chlorine at low dose ( $>0.5$  mg/l) was introduced in April 2007 to inhibit the growth of algae in the channel and on the UV lamps. The consistency of the disinfection process was improved and bacteriological exceedances have not reoccurred.



## B. Explanatory Notes:

The Recycled Water Users Summary Report as described in Permit No. 2000-203 is submitted separately from this report.

The past year's data is presented in tabular and graphical form. Presented in this report are annual monitoring results, as well as special items and discussions itemized in the permits. This document is comprehensive, including supporting information on analytical methods, frequency and changes in analyses, long term tables of selected analytes, operational data, background analyses and treatment plant process control. Where the permit sets limits or requests the analysis of various groups of compounds (such as chlorinated and non-chlorinated phenols, PCBs, hexachlorocyclohexanes, etc.) we have provided summaries and averages of these groups and also of the individual compounds.

Note that, for averaging purposes, "less than" and "not detected" (nd) values were treated as zeros. In many parts of the report zero values are found. Our computer system reads "less than" values as zero for summaries, as well as in computing averages. In those areas where zeros are found the reader can find appropriate method detection limits (MDL) in the table of data. Because "less than" values are averaged as zero a number of the summary table values are lower than the detection limits. The data tables may also contain values expressed as a <X (less than) with some number X. For example, the Diazinon value for PLE on March 10, 1998 (in the table below) is reported as <2.4 ug/L (see the below table); this indicates that one or more, of two or more, determinations was above the MDL, while the average was below the MDL. This value is still treated as a zero for averaging and other summary calculations. Note also, that sub-totals and totals consisting of multiple analytes (see below) are also reported as "<X", where the "X" value is the highest MDL for the particular group of analytes. This has the same significance as "ND" or not detected.

		Organophosphorus Pesticides						
		PLE	PLE	PLE	PLR	PLR	PLR	
		10-MAR-1998	27-APR-1998	10-SEP-1998	10-MAR-1998	27-APR-1998	10-SEP-1998	
		MDL Units	0311980006	0428980006	9809107494	0311980007	0428980007	9809107515
Demeton O	1.69 UG/L	ND	ND	ND	ND	ND	ND	ND
Demeton S	1.82 UG/L	ND	ND	ND	ND	ND	ND	ND
Diazinon	2.41 UG/L	<2.4	ND	ND	<2.4	ND	ND	ND
Guthion	7.1 UG/L	ND	ND	ND	ND	ND	ND	ND
Malathion	2.98 UG/L	ND	ND	ND	ND	ND	ND	ND
Parathion	2.83 UG/L	ND	ND	ND	ND	ND	ND	ND
Thiophosphorus Pesticides		<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1
Demeton -O, -S		<1.8	<0.2	<0.2	<1.8	<0.2	<0.2	<0.2
Total Organophosphorus Pesticides		<7.1	<7.1	<7.1	<7.1	<7.1	<7.1	<7.1

A further limitation is that statistical confidence in the results of an analysis is heavily dependent upon the concentration relative to the Method Detection Limit (MDL). Essentially all of our detection limits have been established using the procedure in 40 CFR, part 136. This statistical basis for the MDL results in a defined statistical confidence (at the 99% Confidence Interval) of essentially  $\pm 100\%$  of the result at or near the MDL. Only at concentrations approximately 5 times the MDL is the confidence interval at  $\pm 20\%$  relative. While the precision of our methods generally ranges from 2-3 significant figures, the above limitations of confidence should always be considered.

Where possible, the influent and effluent values of a given parameter have been included on the same graph to make the removals and other relationships readily apparent. Please note that many of the graphs are on expanded scales that don't go to zero concentrations but show, in magnified scale, that range of concentrations where variation takes place. This makes differences and some trends obvious that might normally not be noticed however, it also provides the temptation to interpret minor changes or trends as being of more significance than they are. Frequent reference to the scales and the actual differences in concentrations is therefore necessary.

“E” Qualifier, estimated concentrations:

Ocean data for several of the trace organics (e.g. chlorinated pesticides and PCB congeners, etc.) contains data that is qualified with a prefixed “E” (see example below). This indicates Estimated concentrations. Analytical technique is sufficiently specific and sensitive enough (GC-MS-MS) so that qualitative identification has high confidence while the quantitative data is below 40CFR136 confidence intervals for MDL concentrations. The concentrations reported with this qualifier indicate that one or more tests identified the compound but it was below detection limits for quantitation. When reported as part of annual averages, an “E” qualifier may accompany average concentration values either below or above MDLs.

Analyte	MDL	Units	SD-14	SD-17	SD-18	SD-19	SD-20	SD-21	RF-1
			2001	2001	2001	2001	2001	2001	2001
			Avg	Avg	Avg	Avg	Avg	Avg	Avg
Hexachlorobenzene	13.3	UG/KG	<13.3	<13.3	<13.3	<13.3	E3.7	<13.3	<b>E2.8</b>
BHC, Gamma isomer	100	UG/KG	ND	ND	ND	ND	ND	ND	ND
Heptachlor	20	UG/KG	ND	ND	ND	ND	ND	ND	ND
Aldrin	133	UG/KG	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	20	UG/KG	ND	ND	ND	ND	ND	ND	ND
o,p-DDE	13.3	UG/KG	<13.3	E43.5	<13.3	E107.0	<13.3	<13.3	<b>E22.0</b>
Alpha Endosulfan	133	UG/KG	ND	ND	ND	ND	ND	ND	ND
Alpha (cis) Chlordane	13.3	UG/KG	<13.3	<13.3	ND	<13.3	<13.3	ND	<13.3
Trans Nonachlor	20	UG/KG	E11.3	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
p,p-DDE	13.3	UG/KG	713.0	1460.0	459.0	2030.0	618.0	693.0	712.0
Dieldrin	20	UG/KG	ND	ND	ND	ND	ND	ND	ND
o,p-DDD	13.3	UG/KG	ND	ND	ND	<13.3	<13.3	<13.3	<13.3
Endrin	20	UG/KG	ND	ND	ND	ND	ND	ND	ND
o,p-DDT	13.3	UG/KG	<13.3	ND	ND	<13.3	<13.3	ND	<13.3
p,p-DDD	13.3	UG/KG	E7.5	E5.5	<13.3	<13.3	E7.8	<13.3	E18.2
p,p-DDT	13.3	UG/KG	E5.9	<13.3	<13.3	<13.3	E5.4	<13.3	<13.3
Mirex	13.3	UG/KG	<13.3	ND	ND	ND	ND	ND	ND

nd= not detected

NA= not analyzed

NS= not sampled

E=estimated value, value is less than the Method Detection Limit but confirmed by GC/MS-MS

### C. Overview of the Metropolitan Wastewater (Metro) System

The Metropolitan Sewerage System serves the Greater San Diego population of 2.2 million from 16 cities and districts generating approximately 170 million gallons of wastewater per day. Planned improvements will increase wastewater treatment capacity to serve an estimated population of 2.9 million through the year 2050. The Metropolitan Wastewater Department treats the wastewater generated in a 450-square-mile area stretching from Del Mar and Poway to the north, Alpine and Lakeside to the east, and south to the Mexican border.



### ISO 14001 Certification

Wastewater Treatment and Disposal Division (formerly called Operations and Maintenance Division) and the Monitoring and Reporting Programs operated by the Environmental Monitoring Technical Services Division has been certified in ISO<sup>1</sup> 14001, Environmental Management Systems.

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<sup>1</sup> International Standards Organization

## D. Overview of SBWRP

The **South Bay Water Reclamation Plant (SBWRP)** relieves the South Metro Sewer Interceptor System and provides local wastewater treatment services and reclaimed or recycled water to the South Bay. The plant opened in May 2002 and has a wastewater treatment capacity of 15 million gallons a day. The plant design incorporates the newest technologies and provides advanced treatment for up to 15 million gallons of wastewater per day. The advanced treatment meets tertiary or reclaimed water standards including disinfection. The SBWRP treatment process is a state-of-the-art implementation of traditional secondary treatment using activated-sludge. Much of the secondary effluent is reclaimed and beneficially reused after tertiary filtration through anthracite coal beds and disinfection with high-intensity ultraviolet (UV) light. The plant shares the South Bay Ocean Outfall (SBOO) with the International Wastewater Treatment Plant (IWTP) operated by the U.S. Section of the International Boundary and Water Commission (IBWC).



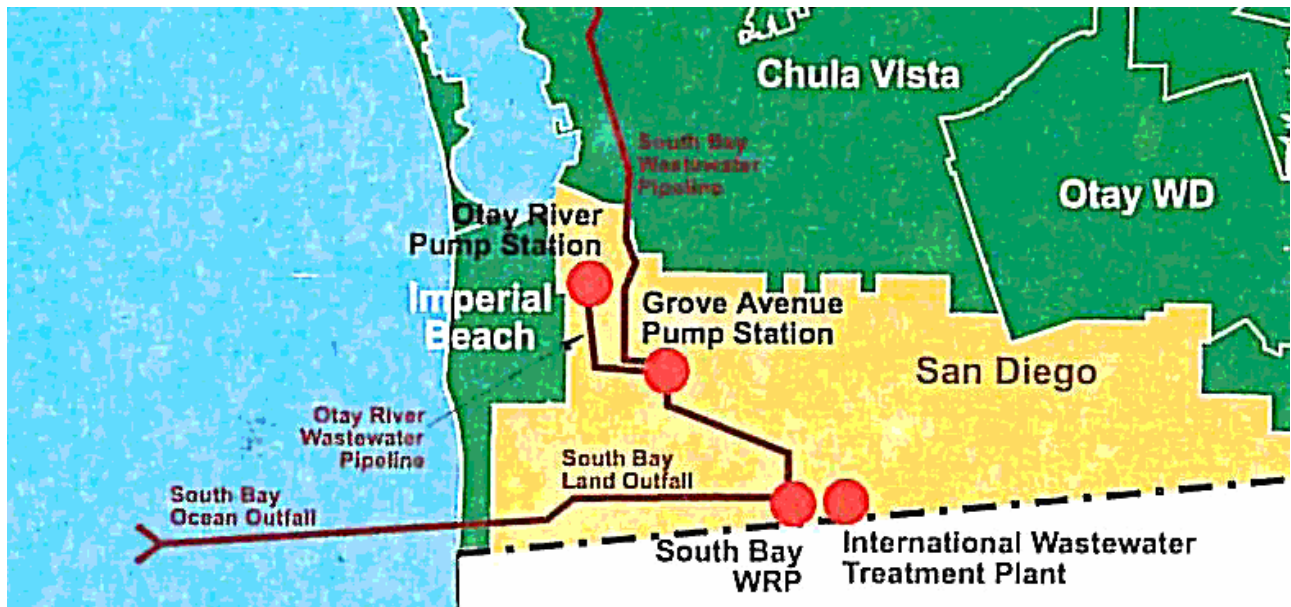
Treatment processes consist of mechanical bulky debris and grit removal at the headworks using standard traveling bar screens and aerated grit chambers. The removed debris is then dewatered and taken to landfills. Suspended solids of wastewater are removed by primary sedimentation. Scum removal is concurrent with primary sedimentation. Primary effluent is followed by industry standard aerated activated sludge secondary treatment. Secondary clarifiers allow settling and removal of the remainder of the solids (also called sludge) which is returned to the Metro System via the South Metro Interceptor and is pumped to the Pt. Loma WWTP. The resultant secondary effluent is either discharged to the South Bay Ocean Outfall or directed to tertiary treatment in the plant. In 2007, approximately half of the influent treated was directed to tertiary treatment. Tertiary treatment consists of running the secondary effluent through anthracite coal beds where it is filtered of remaining solids as it passes through the layered medium. The filtered water then passes through chambers where it is disinfected through exposure to high-energy ultraviolet light (UV). At this stage the "reclaimed" water meets State Title 22 full body contact requirements. Recycled or reclaimed water is beneficially reused for in-plant processes at SBWRP and at the nearby International Wastewater Treatment Plant. However, an increasing percentage of the recycled water is distributed to the Otay Water District for non-potable beneficial reuse off-setting demands for traditional potable water sources.





## South Bay Ocean Outfall (SBOO)

The South Bay Ocean Outfall extends approximately 3.5 miles offshore and discharges effluent in approximately 100 feet of water. The outfall tunnel has an 11 foot diameter and is 19,000 feet long.



The South Bay Water Reclamation Plant (SBWRP) is located at 2411 Dairy Mart Road, San Diego, CA 92154. It sits at the intersection of Dairy Mart and Monument Roads in the Tijuana River Valley just meters north of the U.S.-Mexico International border. The plant relieves the South Metro Sewer Interceptor System and provides local wastewater treatment services and reclaimed water to the South Bay.

#### E. Discussion of Compliance Record

The South Bay Water Reclamation Plant operates with two separate permits. NPDES Permit No.CA0109045/ Order No. 2006-067(with addenda) provides for the treatment and disposition of wastewater via the shared South Bay Ocean Outfall and Reclaimed Water Permit No. 2000-203 (with addenda) provides for water reclamation.

See summary table of compliance issues on next page.

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This is the second year of operating where reclaimed water was produced and distributed. As noted earlier, the influent flows were steadily increased in the startup phase to about 9 MGD, in order to accommodate increasing production.

#### **Ocean Discharge:**

We believe that the discharge to the ocean from SBWRP was within discharge limits. However, as a consequence of maximizing the production and distribution of Reclaimed Water, the discharge to the SB outfall decreased considerably. At many times essentially no flow was discharged to the outfall. Between June and November 2007, the samples taken for monitoring were frequently impacted by the extremely low flow/no flow conditions. We believe that the configuration of the shared outfall structure allows International Wastewater Treatment Plant (IWTP) primary effluent to backup into the intake for our SBWRP effluent sampler. This was confirmed by SB Engineering based on the hydraulic profile of the SB outfall line and the diversion box where the SB outfall flow and IBWC effluent flow mixes. The higher values of the monitored constituents (e.g. BOD, TSS, TDS, etc.) are more characteristic of the primary effluent and the data makes it appear to be exceedances of the discharge limits. As discussed with RWQCB staff, we are continuing to develop a remedy for the situation.

#### **Recycled Water:**

There were 16 exceedances of limits in 2007 for recycled water, for exceeding limits on total coliforms or missing sampling. The problem in reducing total coliforms was traced to algae growth on the walls of the UV disinfection cells which reduced the effectiveness of disinfection. A number of solutions were considered and dosing of chlorine at low dose ( $>0.5$  mg/l) was introduced in April 2007 to inhibit the growth of algae in the channel and on the UV lamps. The consistency of the disinfection process was improved and bacteriological exceedances have not reoccurred.

## Compliance Issues by Month – 2007

NPDES Permit No. R9-2006-0067		
Month	Number of measures exceeding Discharge Limits.	Comments: (see monthly report for further details.)
January	None	None
February	None	None
March	None	None
April	None	None
May	None	None
June	None	See discussion about effluent sample representativeness.
July	None	See discussion about effluent sample representativeness.
August	None	See discussion about effluent sample representativeness.
September	None	See discussion about effluent sample representativeness.
October	None	See discussion about effluent sample representativeness.
November	None	See discussion about effluent sample representativeness.
December	None	None
<b>Total:</b>	<b>0</b>	See discussion about effluent sample representativeness.



<b>Month</b>	We believe that the discharge to the ocean from SBWRP was within discharge limits. However, monitoring of SBWRP effluent produced samples that not appear to be representative.		
June	<i>Constituent</i> BOD	<i>Limit</i> Instantaneous Maximum, 50 mg/L.	<i>Determined value at E-001 was</i> The apparent BOD values for Effluent (SB_OUTFALL_00) were 72.4 mg/L on June 3rd, 2007 and 97.8 on June 18th, 2007, while above the instantaneous maximum effluent limit of 50 mg/L
July	<i>Constituent</i> BOD	<i>Limit</i> Instantaneous Maximum, 50 mg/L.	<i>Determined value at E-001 was</i> greater than 50-mg/L on 9-days, July 3, 5, 10-12, 15-17, and 19.
	BOD	AMEL, 30-mg/L	Apparent Monthly average was 56.7-mg/L.
	BOD % Removal	Average Monthly Percent Removal, 85% or better.	Apparent average monthly % Removal was 81%.
August	<i>Constituent</i>	<i>Limit</i>	<i>Determined value at E-001 was</i>
	BOD	Instantaneous Maximum, 50 mg/L.	greater than 50-mg/L on 11-days, August 12, 13, 15, 16, 19-21, 23, and 28-30.
	BOD	AMEL, 30-mg/L	Apparent Monthly average was 53.66-mg/L.
	BOD % Removal	Average Monthly Percent Removal, 85% or better.	Apparent average monthly % Removal was 805%.
September	<i>Constituent</i>	<i>Limit</i>	<i>Determined value at E-001 was</i>
	BOD	Instantaneous Maximum, 50 mg/L.	greater than 50-mg/L on 4-days, September 9 and 11- 13.
	BOD	AMEL, 30-mg/L	Apparent Monthly average was 34.9-mg/L.
October	<i>Constituent</i>	<i>Limit</i>	<i>Determined value at E-001 was</i>
	BOD	Instantaneous Maximum, 50 mg/L.	greater than 50-mg/L on 4-days, September 9 and 11- 13.
November	<i>Constituent</i> BOD	<i>Limit</i> Instantaneous Maximum, 50 mg/L.	<i>Determined value at E-001 was</i> greater than 50-mg/L on 2-days, November 6 <sup>th</sup> and 7 <sup>th</sup> .

**Reclaimed Water Permit No. 2000-203**

<b>Month</b>	<b>Number of measures exceeding Limits.</b>	<b>Comments: (see monthly report for further details.)</b>
January	4	Total coliforms exceeded the 7-day median limit of 2.2 MPN on 4 days, January 1, 29, 30 and 31, 2007, with values of 4 MPN as a 7-day median for each. Operational data shows that there was no recycled water distributed from January 11 through the 14 <sup>th</sup> and again from January 16 through the 24 <sup>th</sup> . Additionally, two high values (greater than 23 MPN) were obtained for January 11 (33 MPN) and January 14 (80 MPN). While the second occurrence would have exceeded the limit of no more than one sample, in any 30-days, exceeding 23 MPN, no recycled water was distributed.
February	None	None
March	1	Total coliforms exceeded the limit by having more than one occurrence of MPN greater than 23 MPN in a 30-day period. Recycled water total coliforms measured 30 MPN on February 23 and measured 170 MPN, 22-days later, on March 17, 2007. While the occurrences on March 23 and 24 would have exceeded the limit of no more than one sample, in any 30-days, exceeding 23 MPN, no recycled water was distributed.
April	1	Total coliforms exceeded the recycled water permit limit by having more than one occurrence of MPN greater than 23 MPN in a 30-day period. Recycled water total coliforms measured 80 MPN on April 9 along with a value of 170 MPN on March 17, 2007. There was no recycled water distributed on April 15 <sup>th</sup> .
May	None	None
June	None	None
July	None	None
August	None	None
September	None	None
October	None	None
November	4	No composite samples of reclaimed water were taken for November 24, 26, 27, and 29. Required daily monitoring (i.e. TSS, VSS, and BOD) could not be completed.
December	6	Recycled water samples for December 13, 18, 19, 25, 26, and 27, 2007 were not flow-proportioned.
<b>Total:</b>	<b>16</b>	

## F. Plant Facility Operation Report

### SOUTH BAY WATER RECLAMATION PLANT 2007 ANNUAL FACILITY REPORT

Prepared under the direction of Plant Superintendent Michael Roe.

This facility report summarizes some of the key operational considerations involved in the facility operation of the South Bay Water Reclamation Plant (SBWRP) during calendar year 2007. Numerical data and analysis presented in this section are based on plant staff work. Refer to the laboratory data in this document for validated results for official reporting purposes.

#### **Influent Flows:**

The design capacity of the plant is 15 million gallons per day (MGD), with a peak capacity of 18 MGD. The average daily influent flows treated during 2007 were approximately 8.64 with 4.02 mgd discharged to ocean outfall and with 3.02 mgd reclaimed water (RW) distributed.

#### **Influent Sampling:**

Plant staff continues to implement a preventive maintenance program of switching and cleaning of the sample delivery pumps on a regular basis to ensure consistency in samples.

#### **Basin Utilization:**

The number of basins online for each unit processes meets the plant's overflow rates and detention time design criteria ranges which are as follows:

- 3 Primary Tanks on line with 2 offline as backups
- 5 Aeration Basin on line with 3 offline as backups
- 5 Secondary Basin on line with 4 as offline as backups

#### **Solids Handling:**

The influent screening and washer/compaction units operated well, with adequate on-site hopper capacity. Approximately 16.47 tons of screenings were disposed of through the end of December 2007. Grit storage capacity was also adequate with 27.09 tons of grit hauled off site. All primary scum was returned to the MWW collection system (for treatment at the Pt. Loma WWTP facility) by routing the scum collection discharge to the blended sludge pump wet well. Primary and secondary sludge is also routed to the collection system via the blended sludge pumps. The activated sludge process was maintained through the use of high capacity wasting directly from the aeration basins to the blended sludge pumps during the full period of 2007 operation. Average daily totals for blended sludge volumes returned to the Pt. Loma facility via the South Metro Interceptor were 1.44 MGD.

#### **Secondary Performance:**

Secondary treatment performance for TSS and BOD has been an average TSS of 9.16 mg/L and BOD of 10.06 mg/L for 2007. Average secondary effluent turbidity was 2.88 ntu. MCRT has typically been maintained between 5 to 7 days.

### **Tertiary Processes:**

The anthracite media for the tertiary filters did not experience any losses for 2007. Five out of seven filters were available for operation. And 4 to 5 filters were on line to meet the RW demand.

The addition of chlorine at the UV influent to control algae growth was implemented on April 2007. Maintaining a residual of 0.5 mg/l was found to be effective in keeping the UV channel and lamps clean. On October 2007, the duration of application of chlorine was reduced from 24 hrs to 12 hrs. The reduction in duration of chlorination still proved effective in controlling algae growth and has been implemented since then.

### **Water Reclamation & Distribution:**

RW water was delivered to IBWC ((International Boundary Water Commission) at a average daily rate of 0.53 MGD throughout the year. On May 2007, delivery of Reclaimed Water (RW) to Otay Storage tank commences. The average delivery rate during summer months was 5 to 6 mgd and only less than 1 mgd during the winter months.

### **Discussion of compliance record:**

#### **Ocean Discharge:**

The SB outfall flow decreased considerably when the demand for RW increased. This is due to the diversion of all secondary effluent flow for tertiary treatment in order to meet the RW demand by Otay Water District. The decreased in the SB outfall flow (less than 0.5 mgd) has caused effluent flow from the International Boundary Water Commission (IBWC) plant to infiltrate the SB outfall line. This was confirmed by SB Engineering based on the hydraulic profile of the SB outfall line and the diversion box where the SB outfall flow and IBWC effluent flow mixes. Consequently, the SB outfall sampler will collect samples from this infiltrated flow yielding elevated BOD results. The RWQCB was informed formally of this issue and solutions being pursued.

#### **Recycled Water:**

After the dosing of chlorine at low dose ( $>0.5$  mg/l) was introduced in April 2007 to inhibit the growth of algae in the channel and on the UV lamps, bacte violations have not occurred since then.

### **Vector Control:**

Since early in the plant start-up, the presence of midge flies has been an on-going issue with the potential to adversely affect effluent quality, primarily at the secondary clarifiers and tertiary filters. Plant staff continues to utilize the services of a City entomologist who has been working with a number of products designed to disrupt the life-cycle of the insects. Additional, plant staff continues to rotate secondary clarifiers to disrupt midge flies larvae production. Control measures also include lowering the water level of a secondary clarifier to expose the larvae adhering to the side walls so they can be hosed down and removed. The efforts to gain full control over this problem continue.

**Engineering Projects:**

During 2007, the Plant staff has referred several issues back to the Engineering Projects Management (EPM) to be worked under the Capital Improvement Projects (CIP) program. Numbers of deficiencies in the plant were addressed; a number of control system problems were resolved; and number of problems related to the delivery of RW was resolved.

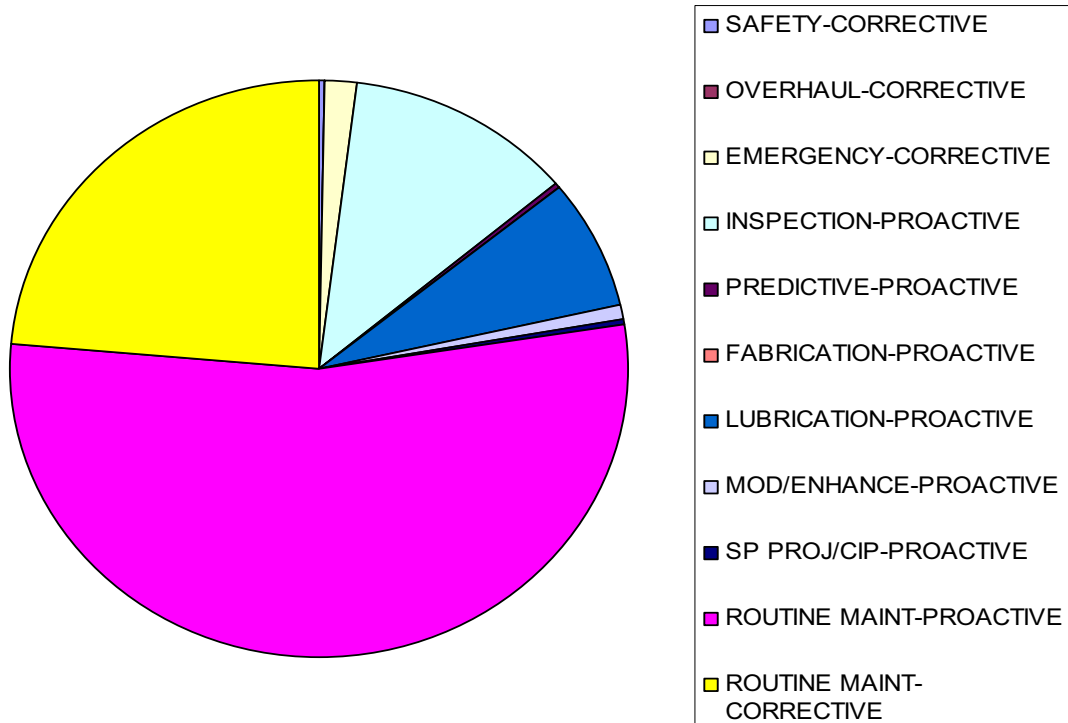
The Treatment Plant Engineer, working with Plant staff and EPM division, completed a number of projects including:

1. Finishing rehabilitation of existing manholes from Latent Defect negotiations
2. Finished installation, field and functional testing of Reclaimed Water Pump No. 3, motor, VFD
3. Completed construction coordination and functional testing with Otay Water District
4. Processed and received warranty parts for the sampling pumps
5. Finalized as-built plans for Package No. 3
6. Installed UV cover (shade) over the UV channel
7. Installed, tested the Surge Anticipated Valve and got ready to pump RW to Otay Water District
8. Negotiated with Kiewit to fix the Cathodic Protection problem
9. Completed asset management program evaluation
10. Evaluated alternatives methods for handling solids thru sampling pumps
11. Evaluated and ordered new parts for the sampling pumps and decided to upgrade them to 5-HP

**Maintenance Report:****South Bay Maintenance Work Orders by Action**

SAFETY-CORRECTIVE - 15.00  
OVERHAUL-CORRECTIVE - 4.00  
EMERGENCY-CORRECTIVE - 77.00  
INSPECTION-PROACTIVE - 572.00  
PREDICTIVE-PROACTIVE - 14.00  
FABRICATION-PROACTIVE - 3.00  
LUBRICATION-PROACTIVE - 346.00  
MOD/ENHANCE-PROACTIVE - 36.00  
SP PROJ/CIP-PROACTIVE - 8.00  
ROUTINE MAINT-PROACTIVE - 2,595.00  
ROUTINE MAINT-CORRECTIVE - 1,126.00

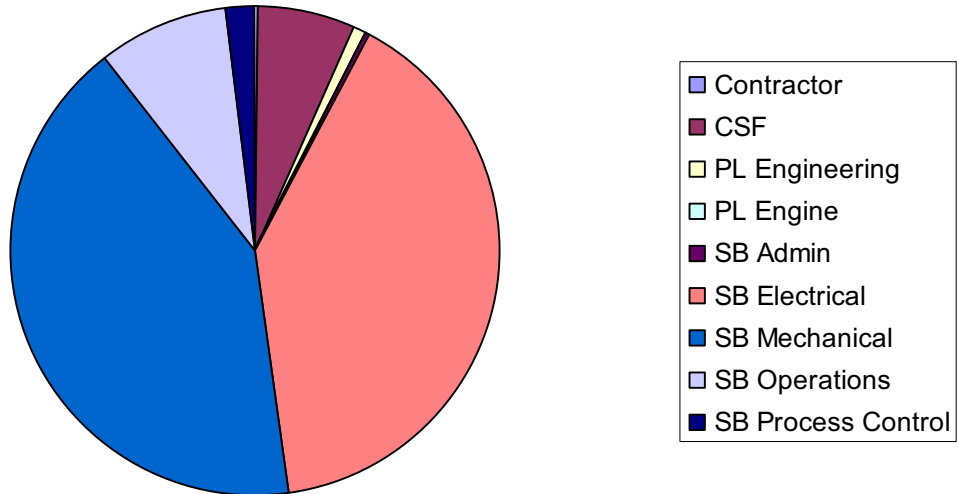
## SBWRP Annual Maintenance Report by Action CY 2007



### South Bay Maintenance Work Orders by Action

Contractor - 17.00  
 CSF - 297.00  
 PL Engineering - 48.00  
 PL Engine - 2.00  
 SB Admin - 11.00  
 SB Electrical - 1,911.00  
 SB Mechanical - 2,001.00  
 SB Operations - 417.00  
 SB Process Control - 91.00

## SBWRP Maintenance Report by Crew CY 2007



## G. Correlation of Results to Plant Conditions

In 2007 the amount of system flows treated at the SBWRP increased by nearly 41%, or an average of over 8 million gallons per day taken from the Metro system thus decreasing influent to the PLWWTP. This first full-year of reclamation efforts at SBWRP dramatically increased treatment volumes and accounts for the bulk of the nearly 9 MGD decrease in average daily flow at Pt. Loma in 2007 compared to 2006. The net reduction is the result of the SBWRP treatment and distribution of reclaimed water for beneficial reuse and discharge of secondary and tertiary effluent to the South Bay Ocean Outfall.

### Annual Totals

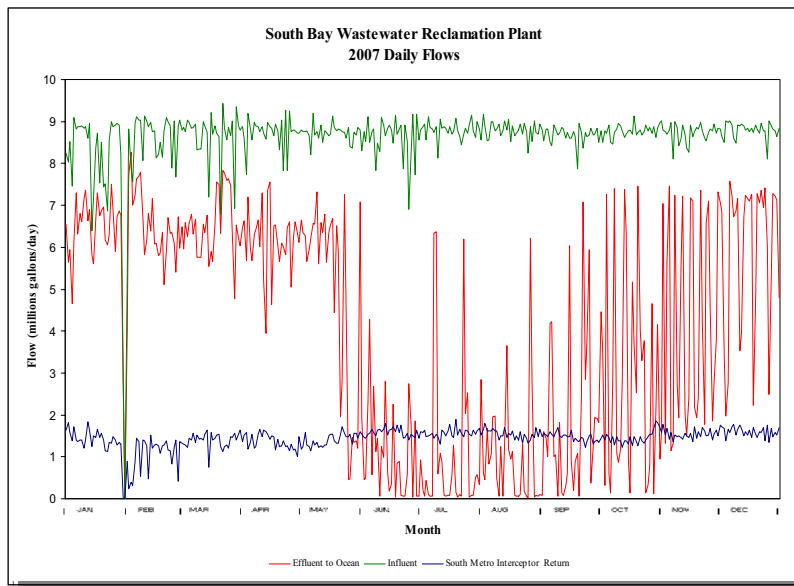
Year	SBWRP Influent (million gals)	SBWRP Discharge to South Bay Outfall (million gals)	SBWRP Distributed Recycled Water (million gals)	System Return Stream (million gals)	Net removed from Metro (million gals)
2007	3,158	1,467	1,101	527	2,568
2006	2,216	1,807	73.7	341	1,881

### Comparative flow data:

Flow stream	2005		2006		2007	
	Daily Average	Annual Total	Daily Average	Annual Total	Daily Average	Annual Total
Influent	4.62	1554	6.06	2216	8.66	3153
RW (Reclaimed Water) Produced	NA	NA	5.96	1097	6.53	2389
RW Distributed	NA	NA	0.40	73.7	3.00	1101
RW In-plant use	NA	NA	0.46	163.0	0.72	261
Total reuse	NA	NA	0.86	236.7	3.72	1361
Effluent to SBOO	3.95	1325	4.94	1807	4.03	1467
Return to SMI	0.76	23.2	0.93	341	1.45	527

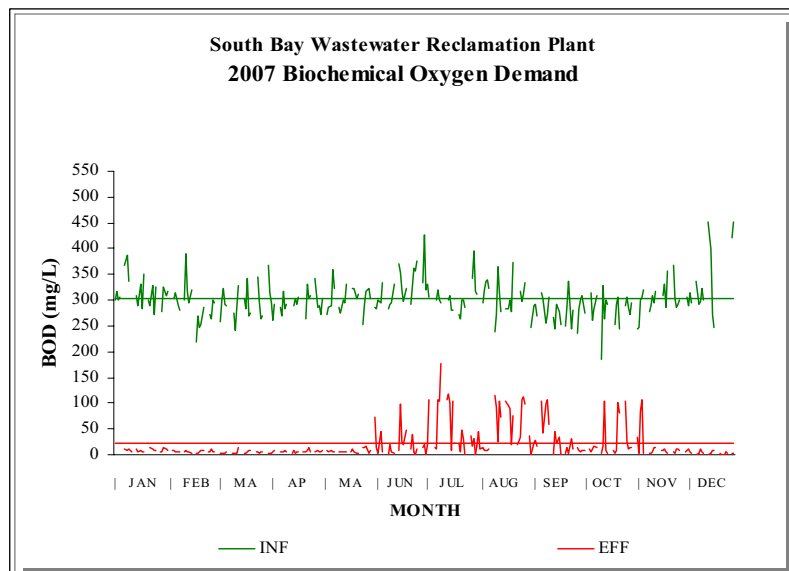
Despite a 42% increase in plant influent, the annual volume discharges to the ocean decreased nearly 20%, from 1,807 in 2006 to 1,467 million gallons in 2007. The production of reclaimed water more than doubled, reflecting increased demand for recycled water for beneficial reuse.



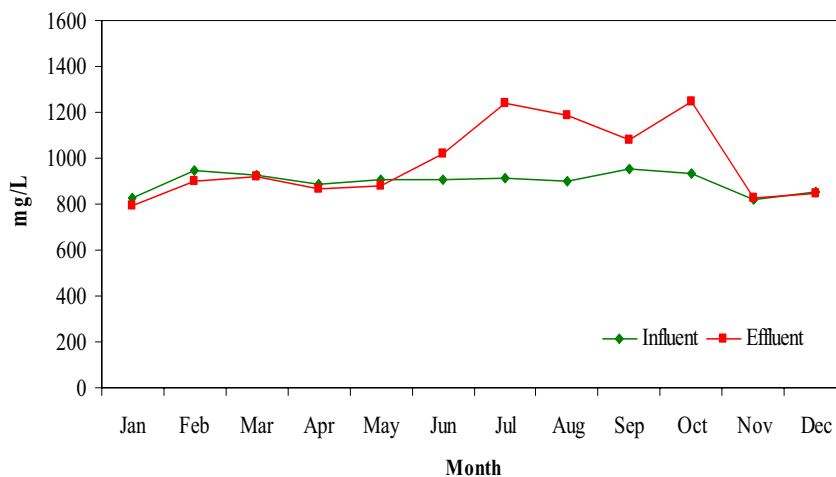


These two graphs clearly show the correlation between SBOO effluent BOD concentrations and effluent flow. This illustrates the inverse effect of low/no flow and increasing BOD concentration, due to infiltration of IWTP effluent to the SBWRP effluent sample intake.

Similarly, TDS concentrations also correlate inversely, increasing when SBWRP effluent flow is low.



**2007 Monthly Averages  
Total Dissolved Solids**



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